

**Figure 2: GI Benefits Analysis**

The Living Laboratory is projected to successfully solve existing campus stormwater problems while adding the benefit of repurposing captured water. GI techniques proposed were evaluated by total annual retention, pollutant reduction, and total cost and savings. All values were determined by GI technique classification.

Total annual retention produces a 20% reduction of runoff on campus. Pollutant reduction yields a percent decrease for both captured water and remaining discharge. Total cost analysis for each GI was correlated to a 25 year lifespan. Total cost accounted for installations and O&M throughout the expected lifespan. Total savings was measured through saved sewage expenditures; for every gallon reduced Stevens saves 1.3 cents.

GI Technique	Annual Retention (gal/yr)	Pollutant Reduction (%)	Total Cost	Total Savings
Living Roof	609,000	25%	\$197,610	\$197,610
Planters	432,000	6%	\$155,904	\$140,339
Bioretention	679,000	6%	\$59,350	\$220,535
Permeable Pavers	645,000	53%	\$148,024	\$209,246
Cisterns	684,000	96%	\$93,475	\$221,904

*"Think globally, act locally"*  
- Elizabeth Fassman-Beck, Ph.D

The RainWorks Team has taken on the EPA campus challenge to implement localized GI for the benefit of stormwater reduction. Stevens campus is unique in that localized GI technology will stimulate the advancement in globalized research. The Living Laboratory implementation will aid in confronting global challenges and transform Stevens into a leader in urban stormwater infrastructure.

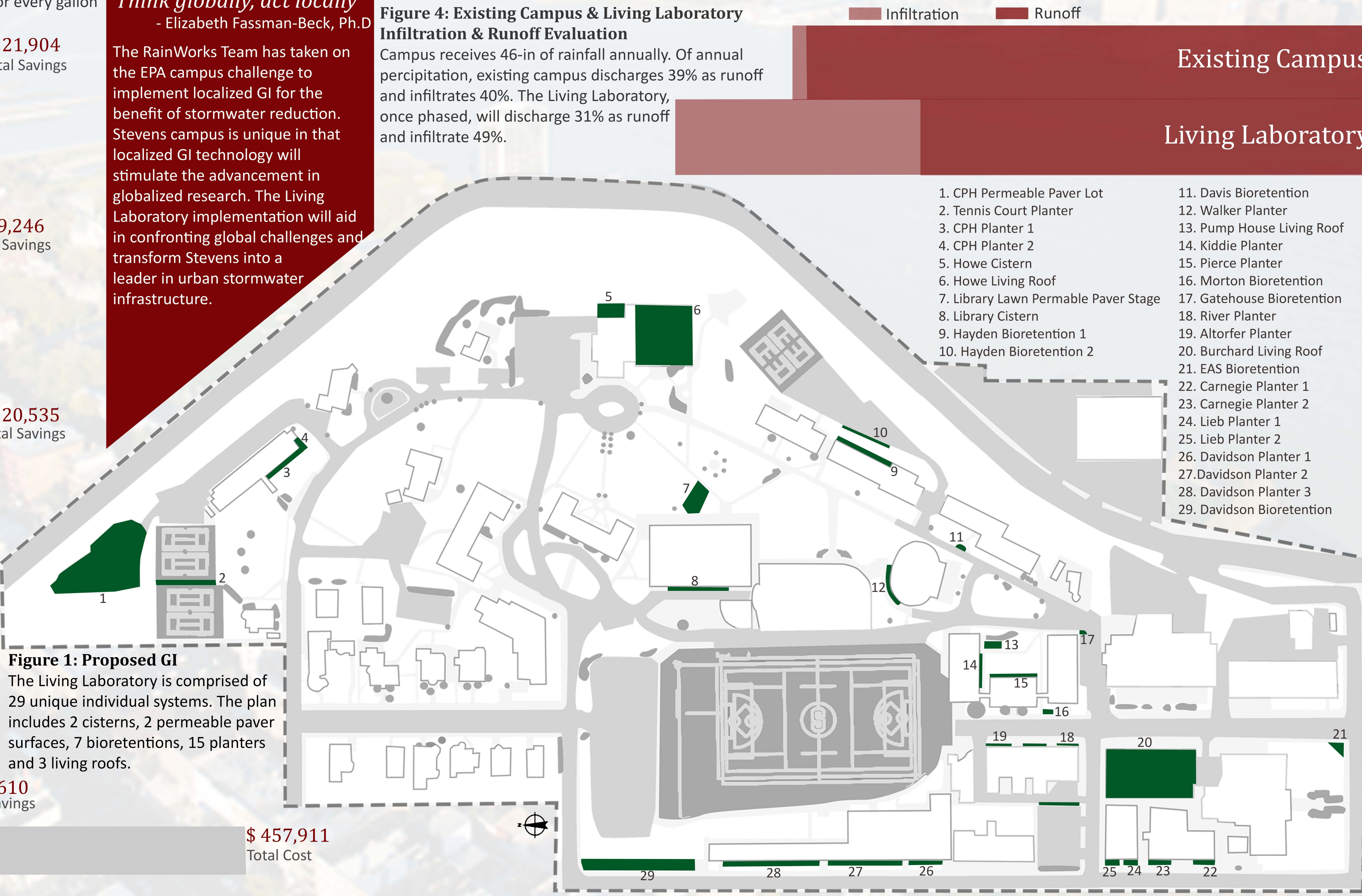


**Figure 3: Conceptual Design for MPK Lawn GI Integration**

MPK Lawn is a prominent example of campus event space with a variety of social functions and student recreation activities. The current lawn vegetation often causes difficulties for Events Management and discourages student involvement. The Living Laboratory phasing of MPK Lawn will include two building based planters and one living roof. The combined GI will not only create an aesthetic environment for future occasions but also decrease lawn flooding. The proximity and accessibility to Stevens classes will nurture a hands-on learning experience and influence the advancement of GI technology research.

**Figure 4: Existing Campus & Living Laboratory Infiltration & Runoff Evaluation**

Campus receives 46-in of rainfall annually. Of annual precipitation, existing campus discharges 39% as runoff and infiltrates 40%. The Living Laboratory, once phased, will discharge 31% as runoff and infiltrate 49%.



**Figure 1: Proposed GI**

The Living Laboratory is comprised of 29 unique individual systems. The plan includes 2 cisterns, 2 permeable paver surfaces, 7 bioretentions, 15 planters and 3 living roofs.

\$ 457,911  
Total Cost